Renewable Energy 2020

Contributing editor
Eric Pogue
Hunton Andrews Kurth LLP

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Lexology Getting The Deal Through is delighted to publish the third edition of *Renewable Energy*, which is available in print and online at www.lexology.com/gtdt.

Lexology Getting The Deal Through provides international expert analysis in key areas of law, practice and regulation for corporate counsel, cross-border legal practitioners, and company directors and officers.

Throughout this edition, and following the unique Lexology Getting The Deal Through format, the same key questions are answered by leading practitioners in each of the jurisdictions featured.

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Every effort has been made to cover all matters of concern to readers. However, specific legal advice should always be sought from experienced local advisers.

Lexology Getting The Deal Through gratefully acknowledges the efforts of all the contributors to this volume, who were chosen for their recognised expertise. We also extend special thanks to the contributing editor, Eric Pogue of Hunton Andrews Kurth LLP, for his continued assistance with this volume.

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The global trend of offshore wind energy

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With a growing global demand for energy, cost-reductions in fixed-bottom turbines and investments skyrocketing, offshore wind power has experienced rapid global development in recent years. This growth has occurred mostly in Europe, Asia and the United States. This article will briefly highlight the growth of offshore wind development globally, and then specifically focus on the growth trends in Europe, the United States and Asia.

Global growth

The global offshore wind energy market has grown by an average of 21 per cent annually since 2013, with a current estimated capacity of 23 gigawatts (GWs). In 2017 and 2018, more than 4GWs were installed each year, making up 8 per cent of the total new wind energy installations during both years. The past few years have been exceptional for offshore wind because of, among other things:

- the rapid expansion of offshore wind development in Europe, the United States, and Asia;
- the development of plans to build an artificial island in the North Sea that will serve as a hub for more than 100GWs of offshore wind;
- the introduction of new economic regulations that encourage zero-subsidy bids in countries such as Germany and the Netherlands, which are a breakthrough for the cost competitiveness of offshore wind; and
- the ever-evolving technology that continues to make wind power more competitive.

Floating turbine technology will soon allow us to reach the vast potential for global offshore wind resources in waters too deep for conventional bottom-fixed turbines. Notably, the United Kingdom commissioned the first floating offshore wind farm in Scotland, which is comprised of five turbines and totals 30MWs. The floating turbines have an average water depth twice as deep as bottom-fixed offshore wind farms. Floating offshore wind farms will likely remain an important commercial sector in the next 10 years, becoming cost-competitive with fixed wind by the mid-2020s. The International Renewable Energy Agency predicts that the first large-scale floating wind farms could be installed by 2025.

If the fixed-turbine trends continue as is, the global offshore wind industry is expected to install 190GWs of offshore wind by 2030. If the expected growth takes into consideration the many new countries that may join the offshore wind revolution because of floating wind energy technology, global offshore wind could reach 210GWs by 2030. With such massive global growth potential, cumulative investments in offshore wind is projected to reach $350 billion by 2030 and $1.47 trillion by 2050.

The global growth in offshore wind power can be attributed to, among other things, the maturity of the industry, growing investor confidence, cost reductions, and lastly, breakthroughs in turbine technology that generate higher outputs. Offshore wind has been on a strong cost-reduction pathway because of the rollout of competitive tender schemes and improved economics resulting from bigger turbines and better construction knowhow. Offshore wind technology is getting close to matching the cost of energy from its onshore counterpart, due to its near-limitless size potential, proximity to coastal city load centres, exceptional utilisation rates, and subsea grid technology improvements by world leaders.

Trends in Europe

Europe has approximately 18.5GWs of installed offshore wind capacity, with 4,543 grid-connected wind turbines across eleven countries. The UK has the largest amount of offshore wind capacity in Europe with 44 per cent of all installations in MWs. Second is Germany with 34 per cent, followed by Denmark with 7 per cent, Belgium with 6.4 per cent, and the Netherlands with 6 per cent.

Europe's offshore wind industry experienced a peak in 2017, reaching record levels of growth. At the end of 2017, 11 European countries had approximately 84 per cent of the global offshore wind farms. China had most of the remaining 16 per cent, followed by Vietnam, Japan, South Korea, and the United States.

In 2018, Europe added 2,649MWs of net offshore wind capacity, which is roughly 15.8 per cent lower than 2017. However, 12 new European projects reached Final Decision Investment, with investments in new assets amounting to €10.3 billion, up 37 per cent from 2017. Project costs in 2018 were lower than in the previous three years, allowing 4.2GWs of additional offshore wind capacity to be financed. These projects will come online in the next couple of years.

In addition to the rising cost competitiveness of offshore wind energy, there are many factors contributing to Europe's offshore industry growth, including:

- the general trend towards simplification of the licensing process. For example, Denmark and Scotland adopted a one-stop-shop system that centralised the whole licensing process and England reduced the number of licensing bodies and required licences;
- the governments' efforts to study the effects of offshore wind farms on the surrounding environment. For example, the Netherlands took an active role in studying the effects of offshore wind facilities on the marine environment, which will help minimise regulatory uncertainties; and
- the new zero-subsidy economic incentive culture, whereby capital costs fall in all markets and companies are increasingly looking into merchant projects.

Although, in the short term, it is projected that the European offshore market will remain flat with few projects reaching installation during 2020, the cost competitiveness of European offshore will remain a key driver for volume. By 2030, total installed offshore wind capacity for Europe is expected to be 78GW.

Trends in the United States

The United States has one operational offshore wind project (Block Island Wind Farm), which came online in December 2016. The Block Island Wind Farm is a 20MW project with five turbines located three miles off the coast of Block Island, Rhode Island.

The first installation of large-scale offshore wind projects is expected between 2021 and 2023, bringing total installations to 2GWs by 2025 and 10GWs by 2030. The Department of Energy has predicted that the United States has a technical offshore wind potential of 2,000GWs, or nearly double the nation's current electricity use.

The Bureau of Ocean Energy Management (BOEM), the agency within the Department of the Interior that is responsible for overseeing offshore renewable energy development in federal waters, has held eight competitive offshore wind lease sales, received more than $473 million in bids over 1.7 million acres, and issued more than 15 active offshore wind leases with over 21GWs of total capacity. The active leases are for development areas off the states of Delaware, Rhode Island, Massachusetts, Virginia, Maryland, New Jersey, New York, and North Carolina. BOEM is in the planning stages for areas offshore New York, South Carolina, California and Hawaii.

The high volume of planned projects along the East Coast have aroused interest from European developers, manufacturers, and investors in this vast new market. It is estimated that the US offshore wind sector will be boosted by a near-term predicted $300 billion in investments.

The Investment Tax Credit (ITC) is a vital component to the development of offshore wind in the United States. In 2015, the ITC was extended for an additional five years, with a gradual phase-out planned by 2020. Projects that started in 2015 and 2016 were eligible for 30 per cent of the ITC, but the amount declined annually. Projects will receive 24 per cent of the ITC if construction started in 2017, 18 per cent if in 2018, and 12 per cent if in 2019. However, the ITC will expire for all new projects after 2019. Once qualified, projects have several years to reach completion.

US Senators are seeking to extend a 30 per cent ITC for offshore wind through 2025, which would lower the cost of electricity from today's prices of offshore wind power by approximately 1.5 cents/kWh. For many projects, this will make the difference between cost-effective and non-cost-effective electricity supply.

If the ITC is not extended, it will change the 'medium-term future balanced cost of capital' for US offshore wind projects. However, the potential for the shortfall in saving from the low cost of tax equity can be offset from a more robust domestic US supply chain.

'The US is in the most enviable position,' said Ross Tyler, strategy and development director for the Business Network. 'The US has scale, the Europeans have developed the technology and we have lease areas, while states are beginning to issue power purchase agreements. We have the major building blocks, but the most important is the financing which cements them all together.'

Trends in Asia

Asian countries, such as China, India, Japan, South Korea, Taiwan, and Vietnam, are now emerging as the front runners of offshore wind energy growth. Cumulative offshore capacity will increase from 111MWs in 2018 to 19GWs in 2019. Asian has a cumulative 100GWs of offshore wind capacity in the pipeline for 2030.

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The offshore wind industry in China is rapidly expanding. In 2018, China was responsible for almost half of the world's $25 billion investment in offshore wind energy, spending $11.4 billion on 13 new offshore wind projects. China is aiming to install 10GWs of offshore wind energy by 2020 and 30GWs by 2030, up from 208MWs in 2017. The Chinese government reportedly continues to support wind energy through its FiT regime, although the rates are continuing to decline. Since 2017, the tariffs have decreased by 5 per cent to 15 per cent, depending on an area's wind resource. The government is also promoting subsidy-free renewables projects as technology costs fall, with the National Energy Administration proposing to set up an auction system, backed by 20-year offtake contracts, guaranteed grid connections, lower transmission fees, protection against curtailment, and eligibility for an expanded green certificate programme, among other things. The large push is believed to be an effort to switch policy away from coal and towards its United Nations climate commitment.

To date, foreign investors have had little involvement in China's renewable sector, with overseas investment accounting for less than 1 per cent of the total. However, improved market practices and transparency are tempting investors into renewables.

In addition, South Korea plans to install 18GWs of offshore capacity by 2030, Japan plans to install 10GWs, and Taiwan plans to install 5.5GWs. India also has an ambitious target of 5GWs of offshore wind power by 2022 and 30GWs by 2030.

In Asia, offshore wind development has the potential to reach the same cost efficiencies of its onshore counterpart, with prices pushed downward in particular by the upward movement in offshore turbine generation capacity. Successful commercialisation of floating offshore wind will also drive the sector's development in Asia.

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